**Lab 1 – Mechatronics / Arduino Introduction**

***An important 21st century skill needed for survival includes knowledge of how things work. The following lab will allow you to understand the reasons for learning mechatronics and microcontroller programming. It will also introduce you to the basic terminology associated with the Arduino development environment.***

**Equipment/Hardware Required**Internet (Arduino website, etc…)  
Arduino Software

What is mechatronics?

Why should you study mechatronics?

Microcontrollers are very important electrical components used in many common devices. What is a microcontroller?

List five common devices which use microcontrollers: (do not list: cellphones, or computers)

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2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The microcontroller we’re using in class is named Arduino. It’s pronounced : “R-Dweee-No”. See your instructor for further clarification.

What is the Arduino named after? (specifically)

Who invented Arduino? (Hint, it’s two people)

There are different versions of the Arduino board. We’ll use the Duemilanove in class this year. Which microcontroller does the Arduino Duemilanove (the one we’re using) contain?

How much flash memory does the Duemilanove have?

**Programming Questions**

When programmers write their code, they use comments. What are programming comments AND why are they used?

What are the two ways to leave comments in the Arduino software?

In the Arduino software, what is a sketch?

Check the “Tools” menu on the Arduino Software to help answer the next few questions.  
Before uploading your first sketch, you need to select the correct \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (what) and the correct \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (where).

The table below shows a series of symbols used in the Arduino software. Please identify their meaning and purpose. \* To help answer the following questions, use the Arduino website in addition to the software. The software shortcut is located under *Start/ Programs/ Tech Ed/*

| Table 1 – Arduino Symbols | | |
| --- | --- | --- |
| Symbol | Name | Purpose (What does it do?) |
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**Important information about the Arduino software and hardware:**

-Upload every change you make to your program. Saving it does not automatically upload the software to your board.

-When you upload a program to the Arduino, it will run that program indefinitely, or until you remove power from it. When you power it back up, it will start the last program over again.

-When you save a sketch, the software creates a folder with that sketch name. Every sketch has its own folder. You may end up with a quite a few folders. Make a folder on your h:drive specifically for the Arduino files.

It’s your goal to become proficient with the software and hardware, and my job to see that it happens. Much of our small circuitry learned in class will help you obtain these goals. The software may not come easily to everyone; remain patient and you will eventually learn it.

Label the Arduino parts:

